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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/714,762	11/17/2003	Dennis J. Schloeman	10014406-3	3356

7590 11/16/2004
HEWLETT-PACKARD COMPANY
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EXAMINER

NGUYEN, LAM S

ART UNIT	PAPER NUMBER
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2853

DATE MAILED: 11/16/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/714,762

Applicant(s)

SCHLOEMAN ET AL.

Examiner

LAM S NGUYEN

Art Unit

2853

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 August 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7,9-13,15-19 and 21-28 is/are rejected.
- 7) ☒ Claim(s) 8, 14, 20 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 January 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Terminal Disclaimer

The terminal disclaimer filed on 08/16/2004 disclaiming the terminal portion of any patent granted on this application, which would extend beyond the expiration date of the reference US 6726300 has been reviewed and is accepted. The terminal disclaimer has been recorded. Therefore, the previous nonstatutory double patenting rejection is withdrawn.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 1-7, 9-13, 15-19, 21-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Saul (EP 1080898 A2) in view of Shiraishi et al. (US 6186611) and Rezanka (US 5751302).

Saul discloses a fluid ejection device comprising:

nozzles (*FIG. 3, element 303*);

firing resistors, wherein each firing resistor (*FIG. 3, elements 301, 309*),

corresponds to a corresponding one of the nozzles (*FIG. 3, element 303*), wherein each firing resistor and corresponding nozzle are located in one zone of a plurality of zones on the fluid ejection device, and wherein each zone has at least one firing resistor and corresponding nozzle (*FIG. 6A and column 7, line 5 to column 8, line 20: Several primitives are formed on the printhead substrate, each includes firing resistors and corresponding nozzles in the same zone*) and at least a first zone of the plurality of zones has a plurality of firing resistors and

corresponding nozzles (*FIG. 6A and column 7, line 5 to column 8, line 20: A primitive includes at least four firing resistors and corresponding nozzles*) (**Referring to claims 21, 24**).

Saul does not disclose addressable select logic responsive to a select address to couple multiple fire pulses to the firing resistors in the zones so that selected resistors in the same zone are coupled to a same fire pulse thereby control fluid ejection from the nozzles in the same zone corresponding to the selected firing resistors, wherein the select logic couples each fire pulse to a unique one or more zones for each value of the select address (**Referring to claim 2**), wherein the fluid ejection device is coupled to an electronic controller, wherein the select logic includes one or more multiplexers, and wherein the electronic controller provides the select address and the fire pulses (**Referring to claims 3, 5, 26**).

Shiraishi et al. disclose an ink jet printer having a select logic unit responsive to a select address (*FIG. 1, signal SEL*) to couple multiple fire pulses (*FIG. 1, signals SM1-4*) to the firing elements (*FIG. 1, element 1*) in the zones (*FIG. 1: a corresponding zone has one firing element*) so that selected elements in the same zone are coupled to a same fire pulse thereby control fluid ejection from the nozzles in the same zone corresponding to the selected firing elements, wherein the fluid ejection device is coupled to an electronic controller and the select logic includes one or more multiplexers operable to provide a fire pulse to an unique one zone (*FIG. 1, element 11-14*), and wherein the electronic controller provides the select address and the fire pulses (*FIG. 1: a corresponding controller generates signal SEL*) (**Referring to claims 3, 5, 26-28**).

Therefore, it would have been obvious for one having ordinary skill in the art at the time the invention was made to include the addressable select logic responsive to couple multiple fire pulses to the firing elements as disclosed by Shiraishi et al. into the printing system disclosed by

Art Unit: 2853

Saul to provide multiple fire pulses to the zones of firing elements. The motivation for doing so is to be possible to select and output different firing pulses to the ink jet energy generating units in order to change the quantity of ink jet from each nozzle to control printing gradation as taught by Shiraishi et al. (*column 2, lines 55-60*).

In addition, Saul does not disclose an internal power supply path configured to provide a substantially constant voltage coupled to the firing resistors, wherein an initiation and duration in which the selected firing resistors coupled to the internal power supply path is controlled **(Referring to claims 22)**.

However, Rezanka discloses an ink jet printhead including an internal power supply path configured to provide a substantially constant voltage coupled to selected firing resistors during a controlled pulse width (period) of a firing pulse (*FIG. 2, elements 38 and 28*).

Therefore, it would have been obvious for one having ordinary skill in the art at the time the invention was made to include the internal power supply path configured to provide a substantially constant voltage coupled to firing resistors as disclosed by Rezanka into the printhead disclosed by Saul. The motivation for doing so is to provide a constant power supply to the firing resistors in order to stable the firing operation as taught by Rezanka (*FIG. 2*).

Saul also discloses the following claimed invention:

Referring to claims 2, 10, 16: wherein a unique one or more zones for each value of the select address is coupled to the fire pulse (*column 7, line 7-15*).

Referring to claims 4, 11, 17: wherein the zones are organized on the fluid ejection device into rows and columns (*FIG. 5A*), wherein if a value of the select address is a first select address, the select logic couples each fire pulse to each row so that each firing resistor in each

Art Unit: 2853

zone in the row is coupled to the same fire pulse, and wherein if the value of the select address is a second select address, the select logic couples each fire pulse to each column so that each firing resistor in each zone in the column is coupled to the same fire pulse.

Referring to claims 6, 12, 18: further comprising feed slots, wherein each zone is defined to include only the nozzles in fluid communication with at least one feed slot, and wherein each feed slot has at least one zone (*Fig. 5A: Feed slots 502Y, 502M, 502C*).

Referring to claims 7, 13, 19: wherein the nozzles in fluid communication with the at least one feed slot are disposed on the fluid ejection device to be adjacent to the at least one feed slot on either a first side or a second side of the at least one feed slot, wherein each zone is defined to include only the nozzles positioned on the first side, or only the nozzles positioned on the second side, and wherein either the first side or the second side has at least one zone (*Fig. 5A: feed slots 502Y, 502M, 502C and column 7, line 7-27*).

Referring to claims 23, 25: wherein the plurality of resistors and plurality of corresponding nozzles of the at least one zone of the plurality of zones are arranged in a plurality of primitives groups, each of the resistors and corresponding nozzles being located in one of the primitive groups; and the selected resistors in the first zone of the plurality of zones are each located in corresponding different primitive groups (*Column 7, lines 20-28: Two primitives are formed in a region (zone). In FIG. 1B, in response to an address signal at A1, the resistors in primitives P1 and P2 are activated*).

Allowable Subject Matter

Claims 8, 14, and 20 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Referring to claims 8, 14, 20: The primary reasons for the indication of the allowability of the claims is the inclusions therein, in combination as currently claimed, of the limitation that at least two parallel and adjacent feed slots, wherein the nozzles area disposed on the fluid ejection device to be adjacent to the feed slots, wherein each zone is defined to include only the nozzles in fluid communication with the adjacent feed slots is neither disclosed nor taught by the cited prior art of record, alone or in combination.

Response to Arguments

Applicant's arguments filed 08/16/2004 have been fully considered but they are not persuasive.

In response to applicant's argument that there is no motivation to combine Saul and Shiraishi because Shiraishi does not disclose, teach, or suggest "firing resistor". The examiner states that the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981). In this case, the lacking in Saul is not "firing resistors" but the addressable select logic responsive to a select address to couple multiple fire pulses to the firing resistors in the zones, that is disclosed by Shiraishi (*See the rejection above for the explanation*). Therefore, it would be obvious for one of ordinary skill

Art Unit: 2853

in the art to combine the teaching of using the addressable select logic disclosed by Shiraishi to couple a selected firing pulse from multiple fire pulses to drive a firing element in order to control the amount of ink ejected from a corresponding nozzle; in other words, the gradation of the printed image is controlled.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LAM S NGUYEN whose telephone number is (571)272-2151. The examiner can normally be reached on 7:00AM - 3:30PM.

Art Unit: 2853

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, STEPHEN D MEIER can be reached on (571)272-2149. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

LN

November 10, 2004



HAI PHAM
PRIMARY EXAMINER